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14. ABSTRACT

This report documents the USMC Maneuver Squad Leader Mastery Model that describes the developmental path to expertise for 0311 rifle maneuver squad leaders and weapons section leaders, referenced collectively throughout this document as maneuver squad leaders. The five-stage descriptive model contains key performance areas, performance indicators at different stages of development, and linkages to the decision making competencies and supporting cognitive and relational skills (CARS) for small unit leaders that were previously identified by TECOM. The purpose of the model is to provide insights into both how individuals progressively develop into high performing maneuver squad leaders and implications for what should be assessed and how during development to improve cognitive readiness with individual, unit, and organizational enhancements. The 58 interviews serving as the basis for this report were conducted at School of Infantry–East (SOI-E), School of Infantry–West (SOI-W), 1st Marine Division, 2nd Marine Division, and with members of two Reserve battalions preparing for deployment. Findings identified nine key performance areas with behavioral indicators of performance (in order of emphasis): Tactical Skills/Tactical Thinking; Character, Initiative, and Command Presence; Train, Mentor, and Develop Marines; Job Knowledge; Administration; Self-Development; Communication; Self-Control and Stress Management; Adaptability/Flexibility. The model will provide insight into what should be assessed during development and eventually provide insight into the effectiveness of developmental enhancements. Immediate next steps include integration of the findings into the SUDM Assessment Battery under development for TECOM to assess small unit leader decision making proficiency.

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Final Report for Marine Corps Maneuver Squad Leader Mastery Model

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EXECUTIVE SUMMARY

Attached in Appendix A is the final report for Marine Corps Maneuver Squad Leader Mastery Model, deliverable A002 under Contract N00014-12-G-0427, Delivery Order 0002 developed by Design Interactive, Inc. and Cognitive Performance Group. Design Interactive, Inc. provided management oversight and guidance throughout the report, and provided insights from independent ISULC observations and small unit decision making research to support the content of this report. Cognitive Performance Group research team developed the development to expertise model focused on maneuver squad leaders. The five-stage descriptive model contains key performance areas, performance indicators at different stages of development, and linkages to the decision making competencies and supporting cognitive and relational skills (CARS) for small unit leaders that were previously identified by TECOM. The purpose of the model is to provide insights into both how individuals progressively develop into high performing maneuver squad leaders and implications for what should be assessed and how during development to improve cognitive readiness with individual, unit, and organizational enhancements.

Appendix B contains a summary table of behavioral indicators and other descriptors of the maneuver squad leader organized into 9 key performance areas by stage of development in the model.

Appendix C summarizes operational definitions of each cognitive competency and CARS developed through research findings and SME interviews. These operational construct definitions are expected to improve measurement efforts targeting decision making skills by increasing the specificity of the desired measurement.

Requirement

The U.S. Marine Corps (USMC) Training and Education Command (TECOM) developed the Small Unit Decision Making (SUDM) initiative in response to Marine Corps Vision and Strategy (MCV&S) 2025 Task 1 to "Improve small unit leader ability to assess, decide, and act in a more decentralized manner." In association with the SUDM initiative and in support of Task 3-7 of the *Commandant's Planning Guidance 2010* to improve training and experience levels for maneuver unit squad leaders in support of decentralized operations in the 21st century hybrid threat environment, the effort documented in this report was to develop a Maneuver Squad Leader Mastery Model. The model describes the developmental path to expertise for 0311 rifle maneuver squad leaders and weapons section leaders, referenced collectively throughout this document as maneuver squad leaders. The five-stage descriptive model contains key performance areas, performance indicators at different stages of development, and linkages to the decision making competencies and supporting cognitive and relational skills (CARS) for small unit leaders that were previously identified by USMC TECOM. The purpose of the model is to provide insights into both how individuals progressively develop into high performing maneuver squad leaders and implications for what should be assessed and how during development to improve cognitive readiness with individual, unit, and organizational enhancements.

Procedure

The USMC TECOM requested experienced Infantry NCOs (Noncommissioned Officers) and Officers from five organizations to participate in interviews and share their knowledge, experiences, and insights into the key performance areas for maneuver squad leaders and the path to development for mastery of this

billet. Interviews serving as the basis for this report were conducted at School of Infantry–East (SOI-E), School of Infantry–West (SOI-W), 1st Marine Division, 2d Marine Division, and with members of two Reserve battalions preparing for deployment. Participants included a total of 58 Marines. Twenty of the participants were serving in Infantry instructor billets, 28 were serving in Infantry billets in the operational forces, and ten were Reservists preparing to be instructors. All participants contributing to the Mastery Model had recent combat experience except for one who had Marine Expeditionary Unit deployment experience to various countries.

Findings

The findings from this effort support an understanding of how maneuver squad leaders progress toward mastery of their duties, roles, and responsibilities. That understanding is derived from discussions with representatives from the USMC who have served in the billets, mentored and trained squad and section leaders, and depended on the maneuver squad leader during combat operations. The collective voices inform both Commanders and the training and education community about the criticality of the role, key performance areas that must be mastered, and the process of attaining that mastery. As one would expect, the picture of the expert maneuver squad leader that emerged is one of selfless dedication, continual improvement, and responsibility for the welfare and lives of a large part of the force. The comprehensive knowledge and ability to apply that knowledge to lead, decide, and act under stress must be developed effectively and efficiently.

The findings identified 9 key performance areas. They are, in order of emphasis in the interview data: Tactical Skills/Tactical Thinking; Character, Initiative, and Command Presence; Train, Mentor, and Develop Marines; Job Knowledge; Administration; Self-Development; Communication; Self-Control and Stress Management; Adaptability/Flexibility.

The interviews contained over 874 references to behavioral indicators and other descriptors of the maneuver squad leader as development progressed through five levels of learning and performance—novice, advanced beginner, competent, proficient, and expert. The descriptors were separated into the 9 key performance areas by stage of development in the model. Profiles of performance in each area, for each stage of development, are presented as a table in Appendix B.

As hypothesized, the performance areas are supported by the cognitive competencies and CARS previously identified by the USMC TECOM as enablers of maneuver squad leader decision making. The Mastery Model links the competencies and CARS to the specific performance areas they support. As expected, a many-to-many relationship exists between the competencies and CARS, and the performance areas, meaning multiple competencies and CARS support multiple performance areas. Furthermore, data collected under the Mastery Model interviews informed a richer understanding of how competencies and CARS reveal themselves in a maneuver squad leader's actions. Definitions of these constructs previously derived from the research literature were compared with incidents describing actual maneuver squad leader experiences and decisions from the interviews. The definitions were operationalized to accurately reflect the application of the cognitive constructs to maneuver squad leader performance on the job. Incident examples for each construct illustrate how maneuver squad leaders apply the competencies and CARS in operational or garrison contexts. These operational construct definitions will improve measurement efforts targeting decision making skills, by increasing the specificity of the desired measurement. The definitions and examples are presented in Appendix C.

Dissemination and Utilization of Findings

The Maneuver Squad Leader Mastery Model codifies the qualities and desired performance that must be considered each time a maneuver squad leader is selected, each time an educational program is instituted, and each time a training plan or initiative is developed. It describes the developmental progression of the small unit leader, to inform training that will accelerate cognitive readiness and approaches that will accurately measure cognitive performance. The interviewees responsible for selecting, training, and developing the maneuver squad leader have an innate understanding of the person they are looking for to fill that billet and how that person can reasonably be expected to develop in that role. This research effort allows leaders at all levels and the training and education community access to their insights with a comprehensive and documented description of the performance demands and requirements for success. It is the responsibility of the Corps, and the individual selected, to set the conditions and marshal the resources to produce higher levels of expertise for the maneuver squad leader billet as a key leadership position. This model contributes insights into the requirements of fulfilling that responsibility. Immediate next steps include integration of the findings into the SUDM Assessment Battery under development for the USMC TECOM to assess small unit leader decision making proficiency.

APPENDIX A:

Final Report for Marine Corps Maneuver Squad Leader Mastery Model

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PURPOSE

In modern warfare, the role of the maneuver squad leader has become a key leadership position. Therefore, the United States Marine Corps (USMC) is focused on improving maneuver squad leaders' decision making and leadership skills in accordance with Marine Corps Vision and Strategy (MCV&S) 2025 Task 1 to "Improve small unit leader ability to assess, decide, and act in a more decentralized manner." In association with the Small Unit Decision Making (SUDM) initiative and in support of Task 3-7 of the *Commandant's Planning Guidance 2010* to improve training and experience levels for maneuver unit squad leaders in support of decentralized operations in the 21st century hybrid threat environment. The goal of the present effort was to develop a model of maneuver squad leader performance and describe the developmental path to mastery. The outcome is a descriptive model of performance indicators at different stages of development and linkage to the competencies and cognitive and relational skills (CARS) for small unit leaders that were previously identified by the USMC Training and Doctrine Command (TECOM) as supporting decision making. The purpose of the model is to describe the path to mastery for the a maneuver squad leader by describing the developmental path to expertise for 0311 rifle maneuver squad leaders and weapons section leaders, referenced collectively throughout this document as maneuver squad leaders. The model will provide insight into what should be assessed during this development, and will support efforts in the future to understand the effects of training and development enhancements.

METHOD

Participants

Interviews serving as the basis for this report were conducted at School of Infantry–East (SOI-E), School of Infantry–West (SOI-W), 1st Marine Division, 2d Marine Division, and with members of two Reserve battalions preparing for deployment. Participants included a total of 58 Marines. Twenty of the participants were serving in Infantry instructor billets, 28 were serving in Infantry billets in the operational forces, and ten were Reservists preparing to be instructors (see Table 1).

All 58 participants were originally identified by the sponsor as having experience serving as a maneuver squad leader and/or training, supervising, or serving closely during operations with maneuver squad leaders. Approximately half of the participants (Instructor population and Reservists) were already familiar with the SUDM constructs to be discussed and the concept of a model of stages of development. The research team identified three participants as lacking the operational experience necessary for a positive contribution to the study. These individuals were excluded from the data set. As a result, data from 55 out of the original 58 participants were analyzed.

Table 1

Participants

Rank	Instructors	Reservists	Operating Forces	Total
LtCol		1		**1**
Maj		2		**2**
Captain			1	**1**
1stLt		1	10	**11**
CWO2		1	3	**4**
CWO	1			**1**
MSgt	3			**3**
GySgt	8	3	2	**13**
SSgt	8	1	12	**21**
Sgt		1		**1**
Total	**20**	**10**	**28**	**58**

Procedure

Before each interview, participants were provided with a description of the study and had the opportunity to ask questions. The description included an overview of the TECOM goal of selecting representatives across a range of USMC organizations to discuss their experiences with the performance and development of the maneuver squad leader. The outcome was described as documenting their collective views of maneuver squad leader development and performance during that process to support improvements in training and performance.

Data were obtained from each participant through in-person interviews. Interviews were conducted individually with only one participant and typically one, and occasionally two, researchers present. Interviews were digitally recorded as a means of capturing all relevant information with researchers taking notes to supplement the recordings. Each interview commenced by capturing demographic information pertinent to each participant. This included such questions as current duty position, deployment history and duty positions during each deployment, and years in the Marine Corps.

Once the background information was captured the researcher guided the participant in constructing a Task Diagram (Militello and Hutton, 1998). The researcher asked the participant to identify four to six of the core task areas essential to effectiveness as a maneuver squad leader. The participant was asked to respond with the important, key tasks, based on their experience. If the participant wanted to contribute characteristic traits, these attributes were also captured, though the focus was on task or performance areas. The participant named these areas and provided several examples and/or a description for each area.

Next, the researcher and participant assembled a proficiency table. The researcher provided a description of five levels of performance—novice, advanced beginner, competent, proficient, and expert. The researcher drew a table with columns for each of the five levels of performance. Participants identified performance descriptors for each level. Prompts included asking the participant to think of a person they knew or remembered who performed at that level and describe them. Prompts also included asking what type of decisions or tasks the person at that level could reliably perform, what type

of knowledge they possessed, or what skills they had and to what extent. When the participant was unable to provide sufficient detail, they were allowed to describe performance at three levels—novice, intermediate, and expert. Most participants were able to provide input to the five stage model. The Task Diagrams were also used to prompt the participant to describe performance at different levels for the key task areas they had specified to insure that all areas of performance that were important to the participant were discussed.

Next, the researcher began the critical decision making section of the interview. During this segment, the participant was asked to identify situations in which he or someone he knew made a key decision in a critical situation. The interviewee described the decision, the context in which it was made, as well as the concluding results. The majority of decisions referenced were made either in a context of combat or training events.

The interviews concluded with questions about most valuable training experiences or other developmental experiences, and an opportunity for the participant to add any additional information he believed to be relevant to the study. This included information such as opinions about current training or course related concerns, as well as organizational issues which may support or hinder the development or performance of an effective maneuver squad leader.

Analysis

Two types of analysis were conducted—one to understand *what* the maneuver squad leader does (tasks, jobs, and attributes) and a second one to understand *how* he performs at different levels of proficiency (knowledge and characteristics of performance).

To understand the "what" of being a maneuver squad leader, the team reviewed the transcripts to identify every performance area—tasks, jobs, and attributes—mentioned in each transcript. Then, the research team sorted the items found into like "piles" and named each pile to form a set of key performance areas. In the second analysis process, the researchers reviewed the transcripts to correct and add to the proficiency tables elicited from the participants during the interviews. Each proficiency table was already organized into five levels of performance during the interview. Descriptions captured on the proficiency tables were then sorted into the performance areas to form the model. Two rounds of analysis were conducted. The first round consisted of both types of analysis using data the first three data collections to gain a preliminary view of the data and form an initial framework for the model. The second round consisted of both types of analyses for the last two data collections and also consolidated the findings across all the data.

First Round of Analyzing Key Performance Areas

After the completion of the interviews, the digital voice recordings were transcribed into written format. Researchers also gathered the written documentation from the interviews, such as the Task Diagrams and proficiency rating tables, and converted them into digital formats. Then, each participant's transcript, Task Diagram, and proficiency ranking table were filed together and the analysis process commenced. The first round of analysis was conducted on the first three sets of data to form an initial framework for the model.

A team of five researchers divided the transcripts among themselves and followed a specified analysis process. The first step consisted of the researcher carefully analyzing individual transcripts to identify

areas of performance and decisions reported. Areas of performance were defined as, “a theme, task, or characteristic of the individual that the interviewee states is important for the maneuver squad leader to be able to do or exhibit.” Decisions were defined as “a judgment or a decision that the maneuver squad leader has to make, either in a combat situation or in garrison.” Each performance area or decision identified was documented along with the participant code number and the page number of statement origination. When researchers identified other relevant pieces of information that did not correspond with performance areas or decisions, he or she recorded this information as well.

The performance areas from the transcript analysis were then combined into a master list, totaling 436 items (the “what”). Five individual researchers grouped these items according to similarity through the process of a card sort (Nielsen, 1995). The researchers then met as a team to condense, identify, and name the key performance areas. A total of 11 key performance areas resulted from this process. Each key performance area was defined based on the types of statements extracted from the transcripts that had been grouped together during the card sort. Once initial definitions of the performance areas had been established, the individual researchers then regrouped their data under the 11 defined performance areas in order to allow for a more accurate assignment of items and to support a frequency count of items by area.

Once performance areas, decisions, and additional relevant information were identified and documented, the researcher then moved on to the next step of the analysis process. In addition to the transcript, this step required the use of the individual, hand written proficiency tables that had been constructed during the interviews and converted into electronic documents. The proficiency table constructed during every interview was corrected or completed by transcript review. The researcher compared the transcripts to the initial proficiency tables, as constructed by the interviewer, in order to identify any areas of discrepancy. For example, if the interviewer originally listed an item under the novice level, yet the transcript indicated that the interviewee was referring to the advanced beginner level, this discrepancy was recognized and amended. As well, if the researcher could extract any additional detail or new information from the transcript, this information was then added to the table. All modifications and additions were carefully documented with original versions of the proficiency tables remaining fully intact as a historical record of the analysis process.

Finally, all corrected and completed proficiency tables for each individual were combined into a master table of behavioral descriptors using the five levels of performance. Using the definitions of the key performance areas that resulted from the card sort, the researchers then made an initial categorization of descriptors (the “how”) from the master proficiency table under each key performance area. Not all data on the master proficiency table was used in this first round of analysis. This procedure was implemented as a means of generating a concise and accurate sampling of example characteristics which small unit leaders possess at the novice, advanced beginner, competent, proficient, and expert levels. The resulting product served to illustrate the initial framework for the model in which representative descriptors (behavioral indicators) of each of five levels of performance are associated with key performance areas.

Second Round of Analyzing Key Performance Areas

The second round of analysis was conducted on data from the last two data collection sessions. The analysis of this data followed the same analysis protocol as the first. The only variation which occurred was in regards to the card sorts as conducted by individual researchers.

Since the 11 performance areas had been previously identified and defined during the first round of analysis, researchers were able to group the performance items (the "what") found in the last two sets of data (438 items) within the 11 previously identified performance areas. This also served as a means of verifying the established performance areas as the data from this second round of analysis significantly corresponded with the originally identified key areas of performance.

Finally, we conducted an analysis to gain insight into the importance of each key performance area. We conducted a frequency count for each researcher for each performance area. Then we averaged the number of items assigned to each performance area. We examined the average number of items by performance area for the Instructor participants and separately for the Operating Forces to see if there were differences in emphasis on key performance areas. We then produced a combined analysis to rank the key performance areas across the all participants.

Analysis of Proficiency Levels and Behavioral Indicators

In order to create a finalized version of the proficiency tables which allowed for the inclusion of both data sets, the proficiency tables resulting from the second round of analysis were combined with those from the first. This table of combined data was then categorized, deconflicted as needed, and summarized by performance areas to form the model which combined the "what" (performance areas) with the "how" (behavioral indicators/descriptors). During the review, the researchers constructed descriptions for each level of proficiency for each key performance area based on a summary of the behavioral descriptors/indicators. Due to insufficient data in two areas of performance, the final set of key performance areas was consolidated to nine.

Operationalization of the SUDM Competencies and CARS

The SUDM initiative developed a set of five competencies (sensemaking, adaptability, problem solving, metacognition, and attentional control) and ten enabling cognitive and relational skills (CARS) for small unit leaders (cognitive flexibility, resilience, anomaly detection, change detection, situational assessment, analytical reasoning, perspective taking, ambiguity toleration, self-awareness, and self-regulation). As part of our analysis, we reviewed performance descriptions, examples, and incidents, compared them to definitions of these constructs obtained from the literature, and created operational definitions of each construct. We also created example incidents to illustrate each construct. We also hypothesized which CARS enabled which competencies.

THE MANEUVER SQUAD LEADER MASTERY MODEL

Overview

The model documents progressive development of mastery through five stages from novice to expert, identifies key performance areas, and provides associated behavioral descriptors/indicators for each level of proficiency within key performance areas. The model also links the key performance areas to the competencies and CARS listed above.

A stage or developmental model consists of levels of progressive proficiency in a specific domain. The domain can be a job, task, or performance area. An example from the literature is the six-stage

developmental model of Intercultural Sensitivity (Bennett, 1993). While this model uses a different basic framework, it is composed of the same types considered in many developmental models. A developmental model consists of a description for each stage that is some combination of a general behavioral description, specific behavioral descriptors or indicators of performance, key performance areas, attitudes, abilities, skills, knowledge, and general cognitive orientation (for example, acceptance of differences, inward focus, a heightened sense of responsibility, or improved self-awareness). Such a model may also include the key developmental task or tasks that must be undertaken by the learner to move to the next stage of performance, how to support the learner in moving to the next stage, and challenges the learner must overcome, as well a recommended assessment strategies by stage.

The basis for the Maneuver Squad Leader Mastery Model is research that expanded the Dreyfus and Dreyfus model of skill acquisition (Dreyfus & Dreyfus, 1986; Dreyfus & Dreyfus, 1980). The five-stage model describes performance at different stages during development. It has been applied to domains such as combat aviation, nursing, industrial accounting, psychotherapy, language acquisition, and chess (see for example, Benner, 1984, 2004; Dreyfus & Dreyfus, 1980; Houldsworth, O'Brien, Butler, & Edwards, 1997; and McElroy, Greiner, & de Chesnay, 1991). Like tactical thinking, many of these domains demand that decisions be made in environments that are complex, ambiguous, and dynamic. Further, skill can be acquired only through firsthand experience doing the task. The expanded model resulting from our previous research consisted of synthesizing findings across studies from these different domains in which job mastery had been studied and integrating findings into a stage structure. In addition, we integrated literature-based recommendations for training and assessment methods. The synthesis of research findings resulted in a more comprehensive model of cognitive skill acquisition (Ross, Phillips, & Cohn, 2009). This general model of skill acquisition was then used to inform the development of a model of tactical thinking (based on extensive interviews and focus groups) which validated the usefulness of the stage model approach (Phillips, Ross, & Cohn, 2009).

The Maneuver Squad Leader Mastery Model consists of four elements: (1) key performance areas, (2) linkage of the key performance areas to the competencies and CARS as they were operationalized based on the interview data, (3) five stages of proficiency, and (4) behavioral descriptors/indicators for each stage. These elements are described below.

Key Performance Areas

Nine key performance areas resulted for the maneuver squad leader: (1) Adaptability/Flexibility; (2) Administration; (3) Character, Initiative and Command Presence; (4) Communication; (5) Job Knowledge; (6) Self-Control and Stress Management; (7) Self-Development; (8) Tactical Skills/Tactical Thinking; and (9) Train, Mentor, and Develop Marines. Of note is that Job Knowledge was separated from Tactical Skills/Tactical Thinking just as knowledge in any area of expertise (knowing what to do) is differentiated from the application of that knowledge (knowing how to do). See Table 2 below for the list of key performance areas and their definitions.

Each of the areas was named and defined based on the items that comprised the “what” of maneuver squad leader performance descriptors that the researchers grouped together as reflecting one concept. The items grouped together were used to construct the definitions of the key performance areas. For example, attributes of a good leader included evident physical fitness, so that aspect is reflected in the definition of Character and Command Presence.

An attempt was made in naming the key performance areas to reflect the discrete aspects that participants referred to when differentiating key parts of the maneuver squad leader's job and to generally use terms they used to describe maneuver squad leader performance and characteristics. No attempt was made to exclude areas of importance named by the participants for any reasons such as difficulty to train or reference to "the intangibles" needed for the position.

Table 2

Nine Key Performance Areas and Definitions

Key Performance Area	Definition
Adaptability/flexibility	The ability to fluidly apply knowledge and tactical principles across situations, or alter one's plans, actions, or decisions when the situation, environment, or circumstance has changed, while still accomplishing the mission or intent.
Administration	The coordination and supervision of people, processes, and equipment in conjunction with the abilities to multitask and delegate assignments.
Character, Initiative, and Command Presence	The mental, physical, and character traits of an effective leader who demonstrates confidence, sets a positive example, garners respect and trust from his subordinates, takes full responsibility for his own actions, and accomplishes tasks and goals autonomously within intent.
Communication	Effectively obtaining, relaying, and explaining information to subordinates, superiors, and adjacent squad or section leaders in order to direct actions or maintain shared understanding.
Job Knowledge	The comprehension of procedures, processes, and asset capabilities required to effectively perform the maneuver squad leader role.
Self-Control and Stress Management	Managing and regulating one's emotional responses, control, and stability in order to prioritize and perform effectively within high stress contexts.
Self-Development	The motivation to continuously acquire and apply new knowledge, skills, and lessons learned to current role requirements and future professional development goals, as a result of an attentiveness to the nature of one's self, personal strengths, limitations, and work styles.
Tactical Skills/Tactical Thinking	The cognition required to apply tactical, technical, and team knowledge to analyze mission requirements, plan, solve tactical problems, and execute the mission decisively, within the big picture and Commander's intent.
Train, Mentor, and Develop Marines	Continuously caring about and fostering the professional and personal development of subordinates, by teaching, training, coaching, building trust, assessing skills and personalities, and providing guidance.

Following the initial determination of key performance areas and definitions, we conducted an analysis of how many concepts were assigned to each of area. Table 3 below reflects the average number of concepts assigned to a key performance area across the five researchers. The averages reflect the number of a researcher assigned items, from the pool of 874, to the performance area. For example, an average of 190 concepts was assigned to Tactical Skills/Tactical Thinking by each researcher, which made it the most frequently discussed area of performance across interviews. The key performance areas reflect the trends in the data, and the average number of concepts assigned to an area reflects the strength of that trend. For example, Tactical Skills/Tactical Thinking and Train; Character, Initiative, and

Command Presence; and, Train, Mentor, and Develop Marines were the most important aspects of maneuver squad leader performance.

Table 3

Number and Percentage of Items Categorized under Each Performance Area Across all Data

Performance Area	Average Number of Data Items within the Performance Area	Percentage of Related Concepts in Data
Tactical Skills/Tactical Thinking	190.05	21.80
Character, Initiative, and Command Presence	186.80	21.40
Train, Mentor, and Develop Marines	172.85	19.80
Job Knowledge	95.95	11.00
Administration	55.00	6.30
Self-Development	52.55	6.00
Communication	46.05	5.30
Self-Control/Stress Management	42.00	4.80
Adaptability/Flexibility	32.75	3.70
Total	**874**	**100**

The research team also examined differences between the Instructor participants and the Operating Force participants to understand if they prioritized key performance areas differently (see Tables 4 and 5 below. The Instructor group and the Operating Forces data reflected the same top three performance areas as found in the overall data set: Tactical Skills/Tactical Thinking and Train; Character, Initiative, and Command Presence; and, Train, Mentor, and Develop Marines.

The Instructor group differed in the emphasis on Train, Mentor, and Develop Marines as the number one performance area. The Operating Forces emphasized Character, Initiative, and Command Presence as the number one performance area. The differences were small, but may indicate a trend in how the two groups tend to view and judge performance. The Instructor group data put more emphasis on Self-Development and Communication, while the Operating Forces emphasized Administration followed by Self-Development and Self-Control and Stress Management. These differences are small and are only shown to suggest that the different points of view may result in emphasizing different aspects of development and performance as well as create a tendency for Subject Matter Expertise to emphasize different aspects during overall judgment of performance. To understand if real differences exist, a follow up survey should be conducted to allow large samples of the different groups to rate the performance areas.

Table 4

Number and Percentage of Items Categorized under Each Performance Area for Instructor Data

Performance Area	Average Number of Data Items within the Performance Area	Percentage of Related Concepts in Data
Train, Mentor, and Develop Marines	78.60	22.50
Tactical Skills/Tactical Thinking	72.80	20.90
Character, Initiative, and Command Presence	61.60	17.60
Job Knowledge	33.80	9.70
Self-Development	23.00	6.60
Communication	22.20	6.40
Administration	20.80	6.00
Self-Control and Stress Management	20.00	5.70
Adaptability/Flexibility	15.80	4.50
Total	**349**	**100**

Table 5

Number and Percentage of Items Categorized under Each Performance Area for Operating Force Data

Performance Area	Average Number of Data Items within the Performance Area	Percentage of Related Concepts in Data
Character, Initiative, and Command Presence	114.00	26.10
Tactical Skills/Tactical Thinking	99.50	22.70
Train, Mentor, and Develop Marines	82.25	18.80
Job Knowledge	52.75	12.00
Administration	23.00	5.30
Self-Development	18.75	4.30
Self-Control and Stress Management	18.00	4.10
Communication	17.25	4.00
Adaptability/Flexibility	12.75	3.00
Total	**438**	**100**

Operationalizing the SUDM Competencies and CARS

Using performance descriptions, examples, and incidents from the entire data set, we completed three activities to operationalize the five competencies (sensemaking, adaptability, problem solving, metacognition, and attentional control) and the ten CARS (cognitive flexibility, resilience, anomaly detection, change detection, situational assessment, analytical reasoning, perspective taking, ambiguity toleration, self-awareness, and self-regulation) that were previously identified by TECOM under the SUDM Initiative as supportive of small unit decision making. We hypothesized which CARS primarily supported which competencies, developed operational definitions of each construct, and developed an example incident for each construct.

The hypothesized relationships are shown in Figure 1. These relationships are based on descriptions of performance. To properly understand the constructs that support small unit decision making and how they are interrelated, future assessments using the SUDM Assessment Battery (under development) must be conducted and the data will be subjected to psychometric analysis to determine the relationships. In addition, the assessments should be correlated with similar assessments based on expert judgment to understand if the constructs being measured are supportive of and appropriately related to current expertise used in selection and performance evaluation before the relationships among the constructs are statistically evaluated.

To construct operational definitions, we used our recent report on the Preliminary SUDM Assessment Battery (Vogel-Walcutt, Ross, Smith, & Brown, 2012) which provides definitions of the constructs derived from the academic literature. We merged the academic definitions with descriptions of actual maneuver squad leader performance taken from the interviews to re-define the constructs as they are applied to maneuver squad leaders on the job. This step of operationalizing the competencies and CARS is crucial. A domain-specific and contextual understanding of the constructs to be assessed must inform the process of selecting from and/or modifying the candidate instruments that will eventually comprise the initial SUDM Assessment Battery.

In conjunction with the operational definitions, we also provided lists of typical maneuver squad leader decisions and judgments in both deployment and garrison settings. The decisions and judgments were aligned with the competencies and CARS as an additional demonstration of how the constructs are in support of maneuver squad leader decision requirements. These definitions and example incidents are shown in Appendix C.

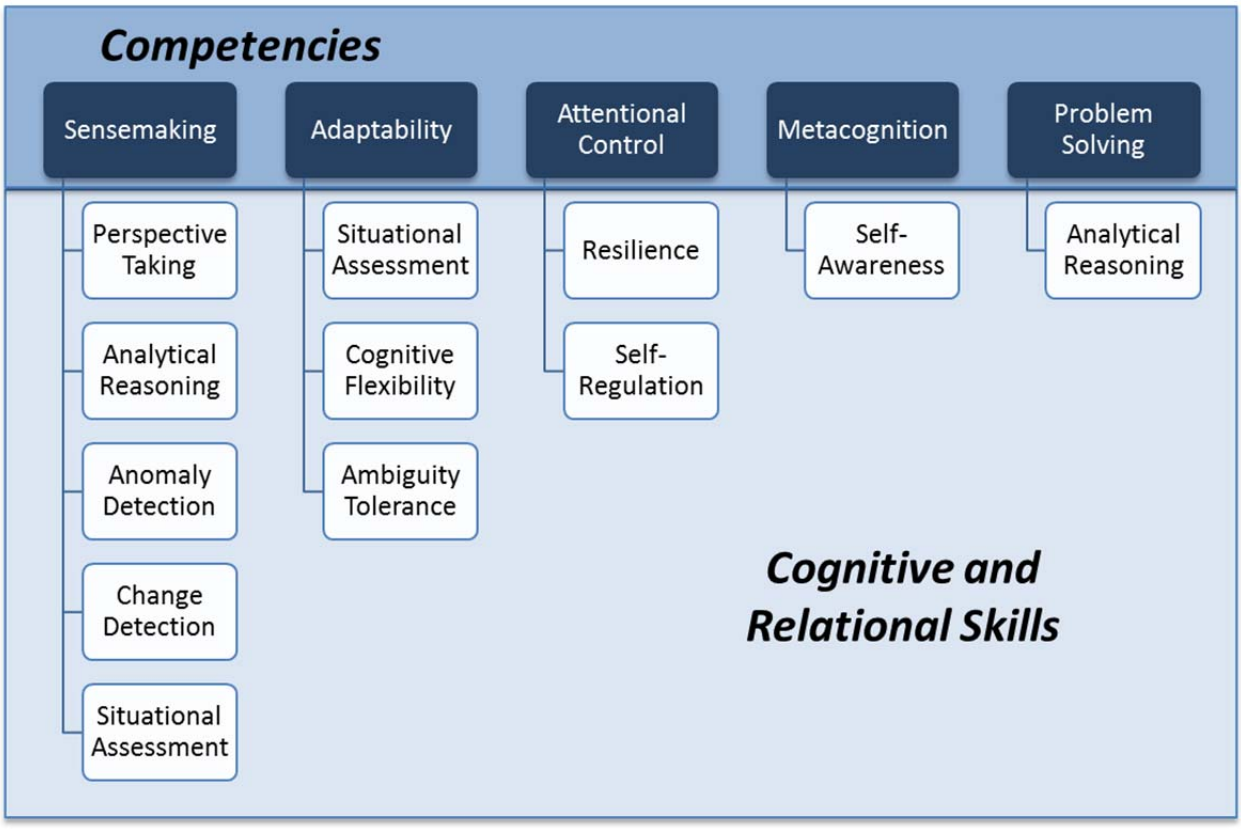

Figure 1. **Hypothesized relationships of SUDM competencies and CARS**

Five Stages of Proficiency and Behavioral Indicators

The purpose of training and development is to move individuals from their current state of skill and knowledge to a higher state of mastery. To facilitate and assess that process, we need to know the stages of development in the domain of interest, i.e., what do individuals know and do at each stage? Without a commonly recognized account of the stages along the development continuum for a specified domain, we lack a roadmap with which to pinpoint the performance level of a particular individual and where they need development to move to the next level. A great deal of research documents the nature of expertise and contrasts it to novice behavior—the two ends of the performance continuum. A much smaller body of research enlightens the nature of performance between these two endpoints. Without an understanding of the intermediate stages of development, efforts to develop individuals are subject to wide variation in outcomes and areas of performance may be overlooked. This current study has generated a stage model of maneuver squad leader mastery that delineates performance at five stages from novice to expert for the maneuver squad leader. The five stages of development are (1) novice, (2) advanced beginner, (3) competent, (4) proficient, and (5) expert.

The most important and extended period of development is the intermediate stages *between* novice and expert. In this model, the intermediate stage is divided into three levels. Each stage has a different level of knowledge, ability to perceive meaning in the environment, different cognitive stances, and decisions are made differently based on those factors. The use of five stages allows for more diagnostic specificity leading to more targeted training and feedback. The addition of key performance areas

increases the specificity of the model in that people generally do no develop linearly and smoothly, but may develop in some areas of proficiency faster than in others.

A high-level version of the model is shown in Appendix B. It provides a profile of each performance area at each stage. The operational definitions and examples of the competencies and CARS were reviewed and compared to each of the performance areas identified earlier. A judgment was made based on comparing the contents of operational definition with the behavioral indicators that had been sorted into the performance area in the model. From that process, competencies and CARS were assigned as supporting the performance area. These relationships are shown in the original framework for the model (Ross, Phillips, & Brown, 2012) but not reflected in the model summary in this report. A revision to follow this current report will provide the entire set of behavioral indicators/descriptors for each performance area by stage of development, revise the linkages as necessary based on the operational definitions, and indicate the linkage in the model. This revised version will be produced in a form that is useful as a reference for USMC Training Command locations and the operating force.

UTILIZATION OF THE MODEL

The Maneuver Squad Leader Mastery Model codifies the qualities and desired performance that must be considered each time a maneuver squad leader is selected, each time an educational program is instituted, and each time a training plan or initiative is developed. It describes the developmental progression of the small unit leader, to inform training that will accelerate cognitive readiness and approaches that will accurately measure cognitive performance. The interviewees responsible for selecting, training, and assigning developmental tasks and experiences to the maneuver squad leader have an innate understanding of the person they are looking for to fill that billet and how that person can reasonably be expected to develop in that role. This research effort allows leaders at all levels and the training and education community access to their insights with a comprehensive and documented description of the performance demands and requirements for success. It is the responsibility of the Corps, and the individual selected, to set the conditions and marshal the resources to produce higher level of expertise for the maneuver squad leader billet as a key leadership position. This model contributes insights into the requirements of fulfilling that responsibility. Immediate next steps include integration of the findings into the SUDM Assessment Battery under development for TECOM to assess small unit leader decision making proficiency.

REFERENCES

Benner, P. (1984). *From novice to expert: Excellence and power in clinical nursing practice*. Menlo Park, CA: Addison-Wesley Publishing Company Nursing Division.

Benner, P. (2004). Using the Dreyfus model of skill acquisition to describe and interpret skill acquisition and clinical judgment in nursing practice and education. *Bulletin of Science, Technology & Society, 24*(3), 189-199.

Bennett, M. J. (1993). Towards Ethnorelativism: A Development Model of Intercultural Sensitivity. In R. M. Paige (Ed.), *Education for the Intercultural Experience*. Yarmouth, ME: Intercultural Press.

Dreyfus, H. L., & Dreyfus, S. E. (1986). *Mind over machine: The power of human intuitive expertise in the era of the computer*. New York: The Free Press.

Dreyfus, S. E., & Dreyfus, H. L. (1980). *A five stage model of the mental activities involved in directed skill acquisition* (Unpublished report supported by the Air Force Office of Scientific Research (AFSC), USAF Contract #F49620-79-C-0063). Berkeley, CA: University of California at Berkeley.

Houldsworth, B., O'Brien, J., Butler, J., & Edwards, J. (1997). Learning in the restructured workplace: A case study. *Education and Training, 39*(6), 211-218.

McElroy, E., Greiner, D., & de Chesnay, M. (1991). Application of the skill acquisition model to the teaching of psychotherapy. *Archives of Psychiatric Nursing, 5*(2), 113-117.

Militello, L. G., & Hutton, R. J. (1998). Applied cognitive task analysis (ACTA): a practitioner's toolkit for understanding cognitive task demands. Ergonomics, 41(11), 1618-1641. doi: 10.1080/001401398186108.

Nielsen, J. (1995). Card Sorting to Discover the Users' Model of the Information Space [Online]. Available: http://www.useit.com/papers/sun/cardsort.html [Accessed 3 October 2012].

Phillips, J., Ross, K. G., & Cohn, J. (2009). Creating tactical expertise using simulations: Guidance for scenario developers and instructors. In D. Schmorrow, J. Cohn & D. Nicholson (Eds.), *The PSI Handbook of Virtual Environments for Training and Education, Volume 1* (pp. 148-164). Westport, Connecticut: Praeger Security International.

Ross, K., Phillips, J., & Cohn, J. (2009). Creating expertise with technology based training. In D. Schmorrow, J. Cohn & D. Nicholson (Eds.), *The PSI Handbook of Virtual Environments for Training and Education, Volume 1* (pp. 66-79). Westport, Connecticut: Praeger Security International.

Ross, K. G., Phillips, J. K., & Brown, T. (2012). *Initial Framework for Marine Corps Maneuver Squad Leader Mastery Model* (Technical Report prepared for the Training and Education Command [TECOM] under contract # M00264-12-P-0249). Orlando, FL: Cognitive Performance Group.

Vogel-Walcutt, J. J., Ross, K. G, Smith, K. M, & Brown, T. F. (2012). *Training and education continuum pilot project: Preliminary assessment battery report* (Technical Report prepared for the Training and Education Command [TECOM] under contract # M00264-12-P-0249). Orlando, FL: Cognitive Performance Group.

APPENDIX B:

HIGH-LEVEL MARINE CORPS MANEUVER SQUAD LEADER MASTERY MODEL

Novice	Advanced Beginner	Competent	Proficient	Expert
Tactical Skills/Tactical Thinking				
Understands and can employ basic tactics with his squad. Can pick up cues in the environment, but has difficulty understanding the meaning of cues and events. Not knowledgeable of how to employ and use all available assets. Has difficulty planning/considering a situation from start to finish including possible consequences. May make quick and rash decisions.	Has a better understanding of the capabilities of the enemy. Still requires some guidance and expects approval from Higher to make certain decisions. Has a better understanding of the situation/environment and how to plan and execute a mission. Considers consequences when problem solving but still requires some time to make a decision.	Confident in his decision making abilities and now works with Higher (instead of just asking for help) to come up with solutions. Higher seeks him for advice. Has a better understanding of how to read environmental cues and events, and what they mean to the mission. Squad tactical skills are sharp and he knows how to employ his available assets.	Planning skills have greatly improved. Mentally simulates possible situations, starts rehearsing and considers 2nd and 3rd order consequences. Has a better sense/reading of the environment. Can pick up on cues and anomalies in time to change mission. Fully understands the implications of his decision making.	More focused on taking the perspective of the enemy. Makes decisions based on the enemy's projected actions and abilities. Can quickly identify a problem and employ squads to solve it. Visualizes the big picture and considers it when making decisions. Paints a picture for higher and is now pushing information up instead of pulling. Can work with a broad intent.
Character, Initiative, and Command Presence				
Lacks confidence in his abilities. He may mask this by appearing overly-confident or arrogant. Does not take criticism well. His appearance may not look professional or mature. Does not hold himself accountable for his decisions and does not take the blame. May have some initiative but is	This is a transitional stage. He is starting to realize the importance of separating himself from the squad (professionally). He now understands his leadership role. However, there is still some micromanaging and he keeps a tight rope around his team leaders.	Starts to understand how the role of appearance (cleanliness, neat uniform and physically fit) plays a part in leadership. Behaviors come off as confident and no longer arrogant. Marines go to him for advice/assistance but he is still a little too cautious with how he handles them. He is taking more responsibilities as	Seen as a very confident leader by Marines. He is respectful and humble but can still (tactfully) reprimand someone. At this stage, he is associating more with senior Marines and leaders. Works more independently from Platoon Commander. Now only calls Higher for supporting assets, ROE, or	A charismatic and strong leader both in combat and in garrison. The Marines look up to him and want to emulate him. He is confident in his abilities and working with his chain of command. He serves as an advisor to the Platoon Commander. He speaks his mind if he has a solution

Novice	Advanced Beginner	Competent	Proficient	Expert
still missing the drive. Requires mentorship and pushing. Wants to know it is okay before making a decision.		a leader. Takes initiative without being told what to do all the time. Sees things need to be done and asks what can be done to help.	potential international incident. Can operate off intent without being told exactly what to do.	and is not a pushover. However, he can effectively take criticism and apply it. He is a professional whose morals never waver. He doesn't swear, is compassionate, and maintains a positive attitude.
Train, Mentor, and Develop Marines				
Difficulty following through with tasks without guidance. Focus is internal on the squad and not on their overall impact. Works with a check-in-the-box system without awareness of Marine capabilities. He has knowledge of basics but not strong with other Infantry subjects.	Begins to take more interest in his squad and getting to know them and helping them. Teaches them but tasks remain simple. Not as confident in his own abilities.	More confident and knowledgeable of squad tasks (e.g., weapon systems but mostly technical tasks). Can teach Marines how to do tasks but still has difficulty explaining the "why" aspect. Can identify strengths and weaknesses of Marines. Provides career guidance for Marines. Begins to tailor communication and training to each individual.	Takes on more of a mentorship role and not just a teacher. Helps Marines understand the "why" aspect. Squad members trust him and his expertise. Now caters training to individual learning styles and his training techniques become more sophisticated. Develops others and provides guidance based on personal experience and lessons learned.	Focus is more on "soft" leadership skills. Provides a positive atmosphere for learning and works on instilling confidence within the squad. Identifies individual strengths and focuses on these. Trains and assess Marines through different techniques (e.g., back-brief, round-robin). Doesn't feel like he has to constantly prove his authority. Uses his network more.
Job Knowledge				
Employs squad and assets based solely on a by-the-book approach. Has book	Is getting a better grasp of the job, although he still needs guidance from Higher. Now	Proficient in many basic tasks and can apply them in a variety of ways. Has a solid	At the point where he fully understands his job and responsibilities. Proficient in	Knows domain and job very well like an encyclopedia. People come

Novice	Advanced Beginner	Competent	Proficient	Expert
knowledge, knows basic infantry skills, and basic MOS knowledge. Requires guidance from Higher to understand and employ his assets.	understands weapon systems organic to the squad and can employ them well. Only in "receive mode" –only learning information but not actively applying that knowledge. Difficulty translating the information to decision making. Keeps a checklist with him when he goes out to the field.	understanding of doctrine and begins to think "outside the box." Increased knowledge of weapons and their capabilities. Performance with weapons is more natural and immediate. Still doesn't have a good grasp on METT-TC factors and does not fully integrate them into the plan. Can write a 5 paragraph Order but still needs more practice on the process and executing.	several skills (e.g., maneuvering forces, Land Navigation, GPS, Compass, Orders process, and MG weapons). Fully integrates METT-TC into his plan. Able to act without immediate use of references (e.g., checklists). Seen as the go-to guy for knowledge about the domain.	to him with issues and questions. He is confident doing about 90% of the jobs above him. Develops tools to support effectiveness of squad members (e.g., templates for call for fire and casualty evacuation). Proficient and can employ organic and non-organic systems. Integrates METT-TC factors in his assessment.
Management				
Has difficulty prioritizing tasks (everything seems important) and multitasking. Tries to do everything himself instead of delegating work. Can organize and supervise a small number of Marines (3 is enough) and some equipment/materials (e.g., names, blood types, serial numbers).	Starting to understand his managerial job roles and may seek information to better understand it. Is getting a handle on the administrative tasks (e.g., monthly counseling happens for every Marine). Becoming comfortable with delegating tasks but still finds it difficult to multitask.	Is now willing to delegate tasks to Marines without providing constant supervision. Knows how to delegate more effectively (e.g., tells 3 team leaders the task vs. telling 12 Marines; delegates casualties to Fire Team).	Comfortable managing a reinforced squad with more people and weapon systems. Can immediately delegate without second guessing. Manages time appropriately.	Connects the importance between managing people/equipment and the mission. Constantly thinks about time, personnel, and equipment management as it relates to the mission. Can quickly and easily task others (e.g., fire team, Platoon Sgt when with patrol).
Self-Development				
Still learning about the domain and needs to do self-	Shows that he cares about improving himself. He has	More aware of his knowledge base. Understands that he	Recognizes his weaknesses and seeks knowledge to	Very educated but still humble enough to realize

Novice	Advanced Beginner	Competent	Proficient	Expert
study in order to acquire new knowledge. Not afraid to ask questions and may ask good questions. However, not familiar with *whom* they can ask questions of and *where* they can get information. Tends not to seek new knowledge from other people outside his immediate circle. Has to be told by coach what he needs to work on and how. Isn't aware of his physical or mental capabilities.	attended some additional courses and added correspondence work. Reading books on military tactics and weapons knowledge.	doesn't know everything. But, he knows where to go to gather information. He collects information proactively.	improve. Strives to be better. Actively searches for information. Interacts more with a variety of people (Instructor Cadre, LTs) and generally his peer interactions are increasing.	there is always something new to learn. Constantly keeps up with the domain and reads consistently (current events, pubs/doctrine, military history). Conducts more independent studying to educate himself. Focuses on a wider network of people to gain knowledge.
Communication				
Has difficulty gauging the appropriate amount of information to report to Higher. Reports may have too much information or leave out important details. Communicates aggressively with squad by yelling or highlighting the negative (models a Drill Instructor).	Can communicate guidance to squad but it is word-for-word what the Platoon Commander said. Can convey knowledge to Marines. Is able to speak more effectively with Senior people.	Begins to adapt communication styles based on individuals. Still requires some guidance from the Platoon Commander, but also pulls information. Talks to Platoon Commander about how to carry out mission. Effectively gets thoughts out across the teams and can explain situations accurately.	Now communicates with Platoon Commander only for big stuff, including assets he needs or situations that have strategic implications. Can paint a picture of the situation that the Marines understand.	Knows how to communicate with Higher and squad effectively. Verbalizes battlefield so others can see. Clearly communicated intentions and plans to squad that they can work with. Feels comfortable communicating with Higher and does it with ease. Encourages cross talk.

Novice	Advanced Beginner	Competent	Proficient	Expert
Self-Control/Stress Management				
Freezes up during a stressful situation. Panics and may overreact. Ends up reporting conflicting information or embellished reports. Does not perform well under stress.	Becomes more comfortable with stressful situations. Recognizes he is overwhelmed and that he needs to do something about it.	Can truly handle stress and still work effectively. May get scared/worried initially but then gets calm.		Can be logical during a firefight. Will continue to manage squad and not be distracted.
Adaptability/Flexibility				
Hesitant to adapt because very driven by plan and may not have enough experience to know how to change the plan. Scared to make mistakes so will do what he is supposed to do for a mission without regard to what is happening around him.	Starts to recognize the need to be able to adapt the plan. However, still can't make decisions fast enough to matter. Actions are mostly reactive. Begins to notice changes in the environment but doesn't know what to do with it.	Starts coming up with contingencies in plans because he knows he will have to adapt. The planning process now produces for him knowledge that he can use to adapt. Considers 2nd and 3rd order effects.	Can quickly adapt to any given situation in a sound and timely manner.	Seamless transition from plan as designed to contingencies and is not flustered by adapting. Anticipates the need to have to adapt from the very beginning, so he has a backup plan in his hip pocket or can quickly generate one.

APPENDIX C:

OPERATIONALIZED DEFINTIONS AND EXAMPLES OF SUDM COMPETENCIES AND CARS

Competency	Enabling CARS	Definition	Example
Sensemaking		The cognitive process, driven by a specific goal, of filtering information for relevancy and using it to construct and continually assess an explanation of the broad or specific situation, often in the form of a story, in order to understand how and why the situation evolved and anticipate what might happen next.	While patrolling through a field on the outskirts of a village, the squad took a suspected sniper round. The maneuver squad leader judged from the sound of the shot that it was a .303 round. He and the rest of the company had been tracking a highly skilled sniper who used a .303 and had been responsible for hitting and fatally wounding three Marines from the company. This sniper was considered highly skilled because he had deadly aim and always eluded capture. Therefore, the sniper was considered a high value target. The maneuver squad leader considered the sound of the shot to narrow down the sniper's position to a general area. Then, he conducted a perspective-taking activity to "flip the map" and visualize the terrain from the sniper's viewpoint to imagine what would be the best position for a sniper attack on the patrol. Because he knew this sniper was highly skilled, he crafted a mental story that the man would likely be positioned in the best possible location, one that offered concealment, cover, and excellent fields of fire. Based on his sensemaking and subsequent judgment of the sniper's location, he immediately ordered his squad members into covered positions that would protect them from the sniper, but also orient them to return fire and ultimately kill or capture the sniper. They successfully neutralized the sniper.
	Perspective Taking	Visualizing the situation from another's viewpoint and assessing his or her motivations and objectives, to predict his or her future actions and proactively position for or take advantageous action.	The patrol was coming up upon a field with a series of compounds in the distance. The patrol's route had them crossing the field and headed toward the compounds. As he approached the field, the maneuver squad leader considered enemy TTP for the region and looked at the terrain to identify the two or three potential positions from which the enemy may attack as the patrol crossed the field. This perspective taking activity supported decision making in that the maneuver squad leader was attuned to watching those positions more closely than others, and began to identify courses of action should the enemy actually attack from those positions.
	Analytical Reasoning	Critically and deliberately examining, assessing, and	The first maneuver squad leader in the platoon typically implemented a much greater dispersion between his fire teams when they moved in

Competency	Enabling CARS	Definition	Example
		critiquing one or more alternatives or assumptions in the context of specified goals (e.g., the mission) and against a set of evaluative criteria (e.g., intent, timing, resources, or ROE).	formation than was unit SOP. He used an analysis of the mission, terrain, enemy tactics, and squad capabilities to identify that a greater dispersion would make the squad more effective against the enemy. His mission had his squad conducting dismounted patrols through the open terrain of rural Afghanistan. The enemy tactics were to attack from a distance outside the range of rifle squad weapons, and then run away to avoid becoming decisively engaged with the Marines. The maneuver squad leader himself was senior and experienced, meaning he was capable of maintaining good command and control of his squad and coordinating effectively with his weapons teams to direct supporting fires. His fire team leaders were likewise strong and able to function autonomously with general tasking and intent from their leader. He reasoned that greater dispersion of the squad would enable better coverage and response to enemy attacks, without sacrificing the ability of the elements to be mutually supportive, even at those distances.
	Anomaly Detection	Realizing through perceptual-cognitive processes that the presence or absence of elements or patterns of elements in the environment is off the baseline for that setting, and therefore requires more explicit reasoning to locate the source of the anomaly and understand its implications.	A squad took contact, and one of the fire teams became engaged with an unknown enemy. The fire team leader reported to the maneuver squad leader that they were engaged by enemy fighters who looked to be adult men. However, the engagement distance was far, so the fire team leader did not get a good look at the combatants. Soon after the squad broke contact, the maneuver squad leader and a team of Marines patrolled through a nearby village. As they rounded a corner in the village, they observed three young boys, approximately 12-16 years old, look at them then squat down to begin playing a dice game. The maneuver squad leader judged this behavior as an anomaly, because the boys didn't begin the game until they saw the Marines. He then engaged in a sensemaking activity to make sense of the anomaly. He crafted a mental story that these boys were following the enemy's common tactic of attacking Marines, and then attempting to blend in with the population. He reasoned that brought dice with them as part of their plan to appear normal and innocent. However, being young adults, they didn't realize that their sudden change of activity was an anomaly that drew suspicion. While the fire team leader reported that

Competency	Enabling CARS	Definition	Example
			the enemy that engaged them were older adults, the maneuver squad leader could easily imagine a story where these three boys were responsible and attempting to cover their involvement. He immediately checked the boys for gunshot residue, and all three tested positive. He detained them.
	Change Detection	Attending to relevant aspects of the environment in order to perceive a difference in one or more elements in the situation, and interpreting that difference to support one's situational awareness, understanding of baseline, or immediate threat assessment.	The squad was toward the end of a lengthy patrol. Upon retrograde back toward base, the maneuver squad leader recognized a change in the demeanor of the villagers they had recently passed on their way out. The villagers were still milling about as they had been previously, but they had a tenseness about them that was different from the first time the patrol encountered them. The tenseness included them paying more attention to the Marines than they normally would; they were more focused on the Marines than usual. Typically the villagers would take note of the Marines but then go back to their business. In this case, they continued to keep an eye on the Marines, as if they were waiting to see the action that would ensue, with the Marines at the center of it. The maneuver squad leader interpreted this tenseness as an impending attack. He knew that the villagers were too intimidated by the insurgents to initiate a talk with or warn the Marines. He suspected they were hanging around to watch the attack they knew was coming. And his suspicion was correct; the patrol came under fire from the far side of the village.
	Situational Assessment	Analytically or intuitively identifying and collecting information from multiple available sources, including one's own knowledge, to analyze relevant factors of METT-TC and construct an understanding of the situation to support a specific task or goal.	As part of a company-sized operation in Fallujah, a squad was moving in formation through the hostile city with a sister squad to one flank, but no friendlies on the other flank. The platoon was beginning to encounter resistance in the form of small arms fire. One Marine had fallen out because he was shot, and was now lying in the middle of the street to the squad's rear. The maneuver squad leader, who was nearest to him, went back to retrieve him while the rest of the patrol halted in covered positions. As the maneuver squad leader began talking to the injured Marine to assess his injury, the Marine held his index finger to his lips as a signal to "shhh, be quiet." The maneuver squad leader listened and heard, from the other side of the courtyard

Competency	Enabling CARS	Definition	Example
			wall 2 meters to his left, the sound of guys changing magazines. He now knew the enemy's position, and he had a sense of the brief window of time available to act. He knew he had to immediately pull the much larger Marine to safety before the hostiles re-engaged. That meant he would have to do it himself rather than his first instinct, which was to call for other Marines to help carry the wounded Marine out of the street. He dragged the Marine to a covered position, but as he was doing so, he himself took some shrapnel from a grenade underneath his flak jacket, on the shoulder. Because he was in pain, he forced the Marine to help him by scooting himself with his good leg while the maneuver squad leader pulled him to safety.
Adaptability		Fluidly modifying or changing one's planned actions when the situation has changed from what was expected, or when the typical approach or plan is rendered less effective than necessary.	A prisoner was inadvertently released, and a maneuver squad leader was given the task to capture and re-detain the man, and bring him back to the detention facility. The maneuver squad leader had detained several prisoners in the past and was familiar with how to snatch a wanted man from a residence, flex-cuff him, and load him into a vehicle to transport him to the FOB. However, as the squad approached the man's residence, it became apparent that the village was throwing a huge party to celebrate the man's release. Over a hundred friends and family members were in or around the residence, celebrating with the man. The maneuver squad leader quickly assessed that a hostile detention of the man would backfire on him—his squad was vastly outnumbered which would encourage the villagers to revolt, and he and his Marines would be forced to apply deadly force to protect themselves. Instead of using the typical and planned approach to detaining a man, the MANEUVER SQUAD LEADER instead came up with a non-hostile ruse to get him into his custody. He told the man that the paperwork for his release had been improperly completed, and his signature was required back at the prison. He requested politely and apologetically that the man come with him to sort out the mess, and then he would return him to his home. The man put up no resistance and gladly went with the squad to further cement his release. The maneuver squad leader's adaptability prevented a skirmish and what would have been harmful second and third order effects.

Competency	Enabling CARS	Definition	Example
	Situational Assessment	Analytically or intuitively identifying and collecting information from multiple available sources, including one's own knowledge, to analyze relevant factors of METT-TC and construct an understanding of the situation to support a specific task or goal.	Two squads were given a mission to conduct a raid on a compound housing known opium distributors. The squads were to be helo-dropped into the middle of the village to conduct the raid mission. The maneuver squad leaders judged several challenges associated with the mission, but nevertheless worked with their platoon commander and platoon sergeant during planning to analyze the mission goals, the terrain of the village and surrounding the landing zone, the enemy capabilities and expected resistance, the civilian population in the village, and the friendly resources required. A plan was developed as a result of the mission analysis, which spanned approximately 48 hours. However, during the helo-transit to the drop site, the company commander called to say that the landing zone had been changed to a location 2 km north of the previously planned drop site. The squads had 15 minutes before they would touch down, and therefore only 15 minutes to reassess the situation and re-plan the sticky operation. The maneuver squad leaders had a solid understanding of the company and platoon commanders' intent, and were able to adapt their planned actions to reach the objective based on a re-assessment of the terrain and enemy they would encounter as a result of the changed landing zone.
	Cognitive Flexibility	Applying knowledge and principles of tactics and leadership differentially based upon the unique demands of the situation. Applying knowledge learned in one context to multiple relevant contexts.	A dismounted squad was moving through an Iraqi city as part of a platoon-sized operation. It was a dirty little town, with concrete buildings, dirt roads, ruts and junk everywhere. They expected to encounter resistance. As they were traveling down an alleyway with the squad spread out, the maneuver squad leader recalled a lesson from maneuver squad leader school: the long axis of the kill zone coincides with the long axis of the target. He calculated that if they were to come upon an enemy machine gun position, it would be oriented down the alleyway. In the current formation, they were exposed and would be easily picked off. He immediately ordered the squad of ten Marines to split in two sections and travel down parallel roads to provide mutual support. He reasoned that splitting the squad would increase its survivability. As it turned out, the enemy did in fact

Competency	Enabling CARS	Definition	Example
			have a machine gun positioned at the end of the alleyway, and by splitting the squad they were able to avoid being trapped and more effectively engage the enemy position.
	Ambiguity Tolerance	The ability to calmly withstand and operate within uncertain environments by delaying drawing a conclusion or making a decision, or by making assessments and decisions in the face of uncertainty.	The squad was tasked to form a blocking position for another squad's operation. While fulfilling this mission, the squad lost the antenna for the electronic counter measures while in transit and went back to an open field to look for and retrieve it. While searching in the field, they came under fire. They had no communications to call for help or even report their situation, and they were vulnerable in the wide open terrain. The maneuver squad leader did not know how many enemies were involved. He didn't want to move forward to engage them and kill them because he didn't have the ability to call in a casualty evacuation in case someone became injured. He calmly handled the situation. He directed his fire teams to bound back two teams at a time, with the third team suppressing the enemy while the others moved. Then he sent one of his fire team leaders with the backup, short distance radio to get close enough to the other squad to radio them for assistance. Eventually they were able to move into a wadi for cover, which expedited their egress.
Attentional Control		Activities related to maintaining a focus on mission completion despite distractors including stress, boredom, fatigue, and emotion.	The Battalion Gunner, with his crew, was visiting the FOB in Ramadi. After the visit, on their way out of the FOB, they had to cut across a float bridge. This time, the vehicles hit a pressure plate IED, and they lost comms with everybody except one maneuver squad leader, a Sergeant. The Sergeant became responsible for directing all the traffic to respond and help the Gunner's convoy, and communicating information as the middleman between the S3, the Battalion Commander, and the Gunner. This was a massive communication and coordination piece for the maneuver squad leader, and he was stressed out about it. He coordinated a ground medevac for them. He knew where the Gunner was located from his first comm with him, and he could see them on the G-Boss. Instead of waiting for a 9-line from the Gunner's vehicles, he immediately launched 4 gun trucks from the FOB as the medevac. He prioritized that, since he knew where they were

Competency	Enabling CARS	Definition	Example
			and knew what assistance they needed, he could use gun trucks and get the medevac spun up immediately. The 9-line could be sent later. The medevac reached the Gunner within 5 minutes. The maneuver squad leader also called in two supporting units to come in and cordon off the area, and directed their strategic positioning as blocking positions based on his knowledge of the terrain right outside the FOB. In all, he managed and juggled 5 radio nets. "Because I was under stress, I was just making really good decisions." He managed the flood of information, made the right decisions as to where to set up the blocking positions, and was able to communicate situation updates back and forth between the Gunner and the S3 and Battalion Commander. After the event, "…my company commander said he couldn't have done things that day that I did. He was like, "Where the hell did that come from?" I was like, 'Dude, I don't know, I was stressed out and I was just in the zone.'"
	Resilience	Overcoming the stress, fatigue, emotion, or pain associated with a current or past event or situation in order to maintain or return to effectiveness as a leader and decision maker.	A maneuver squad leader was injured in a firefight in a city in Iraq. Because no vehicle could fit through the alleys, the casualty evacuation took the form of dismounted reinforcement Marines and stretchers for those who needed them. The reinforced unit would then bound back and out of the city to safety. The maneuver squad leader's injuries were bad enough that a stretcher was called for. However, he knew that if he got on a stretcher, it would require two Marines to carry him, and that would take two Marines out of the fight on the way out of the city. To set an example of mental toughness, and to maximize the employment of his Marines, he refused to be carried on a stretcher and instead walked on his own as the unit moved out of the city. This maneuver squad leader continued to lead his squad through the firefight even after sustaining the injury.
	Self-Regulation	Monitoring, assessing, and adjusting one's own behavior and its effects in order to impact the situation in a way that supports mission, unit, or	A platoon sergeant was involved in a major firefight in Fallujah, where he was operating with one of the squads. During the operation he was hit with shrapnel from a grenade blast and experienced substantial bleeding. While the corpsman was treating him in the middle of the city, he noticed two of the younger Marines watching him with wide

Competency	Enabling CARS	Definition	Example
		training goals.	eyes, their faces growing white. He assessed that they were terrified that their platoon sergeant, who is the most experienced and combat-wise member of the unit, was seriously injured and potentially combat ineffective. He therefore adjusted his behavior by making light of the situation: "Hey corpsman, did the shrapnel mess up any of my tattoos? I hope not – they were expensive!" The Marines immediately began laughing at his horribly misaligned priorities, and gained confidence that "Staff Sergeant must not be hurt too badly if he's worried about his tattoos!" After lightening the mood with his humor, he proceeded to give each Marine a very specific task, with clear direction, that would direct their attention to a small set of goals and allow them to feel they had a purpose as contributors to the fight. He regulated his behavior to use humor, despite the pain and stress, to keep the two Marines from shutting down from fear in the middle of the firefight.
Metacognition		Activities related to considering one's own thought processes, including assessments of strengths and limitations or developmental needs, in support of performing or learning the job.	Marines who are newly billeted as maneuver squad leaders go through a series of realizations about what it takes to be a maneuver squad leader, and how they will need to adjust their thought processes and behaviors to do the job. One of the early realizations, especially challenging for Marines who are promoted to the billet within their current platoon, is that they must think and act like a leader instead of a peer. They can no longer be drinking buddies with their Marines. They can no longer go home on the weekends and hang out with their high school friends. They must separate themselves so that they can effectively manage the welfare of the squad. Another realization is that they must shift from focusing on themselves and their own performance, to focusing on their Marines and the squad's performance. Eventually another shift of focus occurs, from focusing on the squad actions in combat to focusing on the enemy's activities, in order to anticipate and stay a step ahead of the enemy at all times.
	Self-Awareness	Conscious knowledge of one's own character, motives, knowledge base, and skill set in order to request information or	A Sergeant pulled from Security Forces was billeted as a rifle maneuver squad leader. He quickly came to realize that his tactical and technical proficiency was not on par with the other maneuver squad leaders in the platoon. He also realized that as a maneuver squad leader, he

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		assistance when the requirements of the situation call for capabilities beyond one's current abilities.	would be expected to train his Marines on weapons, equipment, and tactics. To gain their respect and trust, he would need to be more knowledgeable than they. So, he made concerted efforts to study manuals and tactical pubs, pull information and experience-based knowledge from his platoon sergeant and trusted peers, and learn all he could from every training experience he encountered.
Problem Solving		Identification, definition, examination, prioritization, and resolution of situations that impede task or mission accomplishment.	A dismounted squad was in a firefight in Fallujah. They'd taken three casualties, and had become holed up in an Iraqi residence they turned into their casualty collection point. They had captured three insurgent fighters flex-cuffed in one room under security and women and children cordoned off in a separate room at the back of the house, also under security. They'd split the squad, with a team on the roof in an overwatch position pulling 360 degree security, and another team on the ground floor. There was fighting outside all around them. They had lost comms because of the structures in the city and the dense urban jungle. A couple members of a CAAT team had come to their aid, with a corpsman in tow, when they heard the shots break out. The maneuver squad leader knew they had a problem – they needed to get out and get help quickly, get care for their wounded, and ensure they wouldn't become overwhelmed by the enemy, who had much greater numbers. Even though he was outranked by his platoon sergeant who was also with the squad, he took charge and came up with a plan. He took out his GPS, stuck it in his platoon sergeant's face, and said, "Hey, I know where we are, I'm going to go get some help." He continued, saying the Marines from the CAAT team knew the position of their vehicles, and he could bound back to the vehicles with them and call for help from there. In this situation, it was a brilliantly reasoned solution to the problem. Once security was posted, the platoon sergeant gave the order to execute. The plan worked, and the squad was able to be extracted successfully from their position.
	Analytical Reasoning	Critically and deliberating examining, assessing, and critiquing one or more	A squad was tasked with an operation to detain an individual in downtown Ramadi. The platoon commander, platoon sergeant, and maneuver squad leader all believed they knew where the man was

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		alternatives or assumptions in the context of specified goals (e.g., the mission) and against a set of evaluative criteria (e.g., intent, timing, resources, or ROE).	located, based on the actionable intelligence they'd received. But, when the squad went into the house and checked the residents' ID cards, they quickly realized they were in the wrong house. The maneuver squad leader was immediately upset with himself for thinking to plan for several other contingencies, but not the simple contingency of what to do if he ended up at the wrong house. During the planning sessions, since he had external agencies working with him, he had focused his attention on what he wanted to task them to do, what he wanted his squad's security posture to be, and so forth. He didn't think about the "what if it's the wrong house?" He didn't have, as he called it, a brush-off plan. Once he realized he was in the wrong house, he knew he had a problem he needed to resolve – smoothing over the situation with the family. The squad hadn't destroyed anything in the house. The maneuver squad leader was civil, apologized to them, and asked if they needed any water. Then he gave them a case of water off one of the Humvees. That became the improvised brush-off plan. Next, he had to analyze what he knew about the target from the planning. He reasoned that they knew they were in the vicinity of the target, so he had to be in one of the residences nearby. He made the decision to go to the house on the right, and then the house on the left, and proceed out from there until they found him. As it turned out, the wanted man was in the house on the left – the third residence they entered.